THE STRATTON COMMISSION : AN HISTORICAL PERSPECTIVE ON POLICY STUDIES IN OCEAN GOVERNANCE, 1969 AND 1998

◈ **Harry N. Scheiber** ◈

University of California, Berkeley

Introduction: [1]

Nearly thirty years have passed since the White House received the famed "Stratton Commission Report," the massive document entitled *Our Nation and the Sea*— the final report of the Commission on Marine Science, Engineering, and Resources, established under an act of Congress two and a half years earlier . [2] The influence of the Stratton Commission Report on U.S. policy proved to be uneven, though certainly of enormous importance overall. Some of its most notable recommendations were almost immediately translated into law and policy; whereas in other respects, while the Report gave new clarity of focus to continuing debates, it was without the resolution of issues on lines the commission had wanted. Predictably enough, there were other areas of policy in which a succession of Presidents, the Congress, and the various ocean constituencies and interest groups either resisted the commission's recommendations or else fell far short of agreement on how to respond. Most significant for our purposes today is the fact that the Stratton Commission Report still stands, these many years later, as the last such major official enterprise charged with taking a full and comprehensive view of ocean policy and national needs. The inventory and analysis that we seek to construct regarding the Commission's sources of general effectiveness and specific achievements, and the lessons that are offered by the record of areas in which it fell short, are the most valuable repository of data on which we can draw today for lessons that a "Stratton II" enterprise might do well to examine.

Winning Center Stage: The Factors Underlying Success

The Stratton Commission was able to argue persuasively in 1969 that it spoke at a "time for decision." This was an accurate claim, if for no other reason than that Presidents Kennedy and Johnson, and also the newly elected Richard Nixon, all had given some significant priority to ocean policy questions in their political campaigns and/or in policy development initiatives while in office. More specifically, both the Johnson and Nixon administrations proved willing to endorse explicit reforms in U.S. marine policy and, even more forcefully, to set in motion concrete reforms in governmental organization affecting the administration of ocean-related issues and functions. The Report thus dealt with issues that were at the time of its preparation of relatively high political visibility, or at least had been acknowledged as important by key actors in political life; and-thanks especially to the notably pro-active involvement of Vice President Humphrey and the genius of the Commission's director and top staff-capable of gaining attention at the highest levels of policy and lawmaking. The national government, in sum, was primed to listen, and, as it proved, was also poised to act.[3] Scarcely a year and a half would pass (a lightning flash, in terms of the normal patterns of decision in matters potentially so controversial) before one of the Commission's most critical and sensitive recommendations-for creation of NOAA- became, albeit in modified and compromised form, a reality. Among the many other major recommendations one can identify, in retrospect, a very respectable number that would become the focus of robust continuing debate. With the passage of only a few years-that is to say, by the mid-1970s, in the midst of a new upsurge of environmentalism and with some major changes in politics-important legislation would follow.

What makes particularly intriguing this receptiveness in Washington to the Commission's wide-ranging report, so threatening to some elements

of the bureaucracy, is the fact that when the enterprise was launched by an act of Congress in 1966 there was (as Wenk has pointed out) no catastrophe, no broadly recognized crisis, no exceptional urgency, in the notion that the needs of the nation and of humankind with respect to ocean science, marine technology, and the interfaces of human economic activity and the ocean environment required comprehensive study-and possibly comprehensive reorientation of both policy and governmental structures of implementation. Rather, the enterprise drew momentum initially from the sheer force of an idea, a core concept, and the dedication of some politically powerful individuals to act upon concerns that had been articulated by the scientific establishment and elements of the "ocean policy community" as well as some user groups.[4] Ultimately the Commission's work drew impetus and effectiveness also from the convergence of advantages that inhered in enjoying the attention of government's highest level, inspired and skillful leadership by the commission's own leadership echelon, opportunities offered and willingly seized by some Cabinet officials and legislative leaders to transcend the ordinary rivalries and routines of self-serving agency interests, and creative involvement of some powerful private-sector interests in the process.

When we consider some of the important elements of background context outside the internal dynamics of government itself, the factor that takes center stage in most retrospective analyses is the impact of the Sputnik launching and the Russian space program—in the context, of course, of Cold War rivalry and competition for military advantage and the attainment of basic security objectives. Behind this event, which had sent a powerful shock wave through the political arena nearly a decade earlier, was the force of a series of commissions and special studies that had come out of the scientific community and pressed for more systematic attention and financial support from the government for oceanographic research.[5] Traditionally, moreover, both in Europe and in America, going back to the eighteenth century, the interest of the naval forces in ocean studies had been a driving force and principal stated objective (if not necessarily the real agenda, which of course was often basic science) that won public support for oceanography.[6] The United States in the "Sputnik" phase of the Cold War was no exception.

Increasingly in the years leading up to the Stratton Commission's enterprise, proponents of an expanded national commitment to oceanography had become progressively more committed explicitly to the larger goals of developing new technologies and to economic development. The commercial fisheries had been the principal focus of such new orientation as had emerged with applied objectives, centering upon management and conservation objectives as well as exploration and more effective exploitation.[7] By the mid-1960s, however, the focus had become much broader and now encompassed the potential of mining in the Continental Shelf and high seas areas, beyond what was already established in the offshore oil drilling field. (Other economic activities and their interrelatedness were being debated, too, at least in academic circles, by the mid-1960s, as will be noted more fully below.) The example in the 1960s of the U.S. space program-which was regularly cited by proponents of reform in ocean policy as a model for the exploration of the "inner space" of the oceans"-lent force and some useful glamour to the effort to force reconsideration of oceans issues and management. This was a time when the imperatives of the Cold War, especially with an increasing emphasis in naval planning on nuclear warfare based upon submarine operations, undoubtedly were still foremost in lending great urgency to a focus on the oceans.[8] But the specific example of NASA-which took space, as one might take the oceans, as the organizing principle for agency definition, with comprehensive operational as well as scientific and policy responsibilities-was a constant reminder and model for those whose vision pointed toward creation of an agency (a "wet NASA") with comparable scope and importance of well-focused functions.

Another quite different factor in the background needs also to be taken into account. This was the well-established tradition of "corporativism" (as we may term it) that had brought industry, resource managers, and scientists together in alliances to obtain public support for American scientific research on fisheries. This style of collaboration among the resource users, the biologists, and the managers (and the politicians as well) had also been transferred after World War II extensively to the arena of regulation itself. Thus many of the management programs for both coastal fisheries and the programs under jurisdiction of a multilateral agency were specifically designed to include representatives of the industry as

an integral part of their scientific and operations oversight.[9] This was the beginning, I think it fair to say, of what became an important element of the "ocean community," as it is called in political analysis of the period we are discussing, as the core fisheries-oriented coalitions began to interact systematically with other industrial-scientific-engineering clusters of interests and the political leaders who took a special interest in their varied concerns and causes.

By the mid-1960s, the oceanographic institutes, schools and departments of fisheries science, fisheries agencies, and industrial groups in the fisheries sectors had begun to exchange ideas and get involved in the policy process in an increasingly systematized and routinized way. The published evidence of these interactions, together with the archival evidence of the period insofar as it has been analyzed to date, suggest that the ocean-use industries were impelled in this development by the rapid movement in international relations to fashion a new legal order for the oceans. The debates and often-dramatic conflicts concerning limits of the territorial seas, and the movement for a comprehensive Law of the Sea Convention that might establish a comprehensive global regime for the oceans—a regime, as the reformers hoped, which might fundamentally redefine the obligations and rights of nations in relation to ocean space and resources-was a matter of urgent common concern for the leaders and interest groups in the emergent ocean community. It also brought them into an important dialogue with the U.S. naval leaders and with the State Department planners who had an agenda that made multilateralism itself a top priority, sometimes in a way that was at odds with the interests of American industries or segments of industries (e.g., the salmon fishing fleet of the Pacific Northwest, which for decades had pressed for unilateralist expansion of the U.S. offshore territorial boundary).[10] The Law of the Sea negotiations meant that U.S. domestic policy as well as foreign policy initiatives (and adaptations) were driven in considerable measure by a need to keep abreast of, and if possible influence the basic direction of, the reformation of international law. Indeed, when the Stratton Commission considered these matters, its Report would include repeated calls for assessment of U.S. domestic policy options with a view toward preparation for, or eventual alignment with, changes in the legal order of global marine relationships.

This emergence of an identifiable ocean community of scientists, industrial elements, experts in government, and politicians who shared common ground in their policy concerns was paralleled by another movement: the trend toward recognition, by the ocean community itself primarily, that ocean-related policy issues needed to be addressed from a variety of disciplinary perspectives. A dramatic example of how strong this trend had become was to be found in a major California study of that state's ocean and coastal policies. The study, which appeared in 1965, had been directed by Milner B. Schaefer, a marine biologist of exceptional distinction, and was undertaken by the Institute of Marine Resources (IMR), based at the University of California's Scripps Institution of Oceanography. The Schaefer IMR report was a brilliant success in challenging very fundamentally both established political-jurisdictional structures: this was in its basic premise that the coastal waters and adjacent land areas should be conceptualized—both for science and for policy purposes—as a social and ecological system requiring the exercise of state-level authority informed by systematic advising by scientists, lawyers, and social scientists. In this regard, Schaefer and his colleagues in the IMR project played a key role in shaping the core idea of "coastal zone management" as a governmental and scientific enterprise-also reflecting, however, what Schaefer and others of equal prominence among the scientists in the ocean community were then advising Congress, as it considered the question of shaping ocean policy. Schaefer urged the legislators to broaden their concept of research support on scientific oceans issues to include support for related research in the social sciences and in law. "It seems evident," Schaefer wrote to Senator Warren Magnuson,

> that in many cases the handicaps to rational, effective, and economically efficient development ....of unutilized or underutilized resources ... lie to a large extent in the area of economic and legal factors, and therefore a thorough study of such factors, and consideration of possible means of changing them, will be highly important.[11]

In 1965 this idea of the coastal zone as a multidimensional and holistic unit for study and management was still very new and (in the best sense)

truly subversive: it represented a decisive and challenging break from existing norms.[12] In the same way, the idea of ecosystem-oriented fisheries habitat studies had been advanced in deepwater ocean science of the previous two decades—most notably, in California, by the CalCOFI-inspired ecosystem research in Pacific waters.[13] Now the studies under Schaefer's direction pointed to the need for both science and public policy to adopt a similar approach to the coastal land and water zones as a complex environmental system interacting with human settlement and activities. Bringing interdisciplinary intellectual resources to bear on a systematic phenomenon, in this way, was no less radical an idea for ocean and coastal policy planning than the ecological approach to habitat had been in fisheries science.[14]

For our purposes, the California study that Schaefer headed is especially important because it offered a useful model for the approach to study and analysis of marine policy issues that would be taken by the Stratton Commission. For as the Schaefer commission at IMR had done, the Stratton Commission dealt in depth with distinctive segments of ocean policy; and in doing so, Stratton (like Schaefer) brought together in a common enterprise many experts from a variety of disciplines in social science as well as from law, marine sciences, and engineering to examine in interdisciplinary or multidisciplinary terms the full dimensions of each segment (fisheries, recreation, mining, etc.). And like the IMR report, the Stratton Commission Report kept at the forefront of all its recommendations the need for coordination, clarity of overarching objectives, and maximization of management-level integration for the governance of ocean resources and ocean space. It is not coincidental, either, that some of the major figures, including Schaefer himself, who were involved in the IMR study's directorate or advisory panels, were also actively involved in the work of the Stratton Commission.

None of this is meant to suggest that the successes of Stratton and his cohorts in seizing the moment in national ocean affairs were merely derivatory. My intention is, rather, to recall-as we consider the conditions of the Commission's achievements-that there was not only general impetus on several fronts in the 1960s to make U.S. ocean policy more coherent and effective; there was also a growing recognition in scientific and policy circles of the need to approach ocean (including coastal) policy issues in a more comprehensive and focused mode. Because the Schaefer IMR study was already out in the public domain, it was available to serve the Stratton commissioners and advisers as a model for its own work-and , at the very least, it indicates that the intellectual groundwork, and not only the political background, was already firmly established for the approach that the Stratton Commission mobilized so effectively in pursuing its mission.

That is to say, Stratton Commission's Report, in calling for "understanding of ecosystem dynamics," no less than in suggesting designs for "comprehensive [management] systems," reflected the strength and growing acceptance of new ideas that had already penetrated marine science debate as well as policy analysis discussion.[15] It was one of the Stratton Commission's major contributions to ocean policy that it brought these new modes of thinking into play in so effective a way at the highest level of the national policy process.

"Comprehensive Policy" and "Systems" (in the plural)

One of the most controversial reforms proposed by the Stratton Commission did not go to substantive policy at all, but rather was its proposal for a new National Ocean and Atmospheric Agency (NOAA). The new agency, intended to be an independent one that would assume supervision and coordination of numerous agencies formerly scattered throughout the government-but in addition would have some important managerial functions- was designed (as the Report argued) "to mobilize and impart energy to the total undertaking" of a plan for national action.[16] The list of functions that the Report recommended for assignment to NOAA was broad and revealed the serious intention to achieve a kind of comprehensiveness of management oversight and implementation that had never before been envisioned for ocean resources and problems. Among these functions were oceans exploration and support of basic science, development of marine fisheries and oversight of their management by a proposed set of regional interstate agencies formed by federal compact, promotion of marine education, and the administration

coordination for purposes of reducing of conflicts in multiple-use areas of resource management. In addition, the Report proposed that NOAA would provide directly essential services that included mapping and weather reporting to marine users and to the general public, and the development and oversight of a marine minerals program.

For all its emphasis on coordination and comprehensiveness of vision, policy concepts, and administration, the Stratton Commission recognized in explicit language the intractable realities of segmentation, declaring:

> It is impossible to deal with development and management issues in terms of marine resources as a whole, although general policy considerations must be accommodated.... There is no single national policy uniformly applicable to all resources, just as there is no single defense, economic, or foreign policy. Rather, there is only a body of experience and general objectives which guide decisions on specific issues at specific times.[17]

This feature of the Report is often forgotten when champions of greater centralization of power over ocean affairs hark back to the Stratton Commission as an advocate of an ideal that fell short of realization. The NOAA proposal, in its original form, is too easily conflated with the much more abstract idea of a "comprehensive policy." In fact, the organization of the Commission's studies and also its final report addressed issues in segments; the reality that separate sectors existed and had to be considered, to some degree, on their own individual terms (for fisheries, for recreation, for minerals, for scientific research, for defense, for international law, etc.) was not lost from sight or subordinated for cosmetic purposes to the rhetoric of concern with holistic issues.

As I have argued in a previous OGSG meeting, in revisiting the wide-ranging series of issues explored by the Commission, it is important to keep the realities of segmentation in mind. Some room for play at the joints—even zones of contradiction and a certain incoherence—will very likely need to be taken, now as in 1969, as a political requirement of success in achieving policy reform and adjustment. The ideal of "coherence" will not always be attainable; some of the problems before us in 1998 will have to be taken on their own terms, not only for political reasons but very likely because the optimal approach to policy, by one "objective" non-political standard or another, e.g., one dictated by scientific analysis, may indicate the desirability of segmented, single-sector solutions rather than a dogmatic subordination of sectoral policy goals to the imperatives of "comprehensiveness."[18]

To elevate comprehensiveness in the abstract to the status of the single controlling and determinative objective is an alluring option that will probably need to be resisted in several important segments of marine policy evaluation and reform. It may be found that the objective of attaining coherence will be much better served by accepting single-sector solutions when the evidence indicates their appropriateness, than by dashing headlong on a perhaps-quixotic course toward attaining comprehensive and wholly integrated policy.

When we consider, then, the best design of investigation for a Stratton Commission II, it seems to me important to accept that the single-sector approach is not necessarily obsolete or suboptimal-or *per se* deplorable. It is manifestly essential, however, that a new commission should take into account the need to attack head-on, as did the Stratton Commission, the problem of patently unnecessary (and damaging) administrative fragmentation of responsibility. And in light of the legacy of the 1970s-that great array of specialized legislation creating specialized agencies to oversee in a compartmentalized way specific areas of marine resources and issues (the Magnuson fisheries act, the Marine Mammal Protection Act, the Endangered Species Act, and the rest)-it seems important that the new commission should seek to identify the most promising avenues for more effective coordination, at a minimum, or outright administrative merger.

A final lesson to be drawn, in this context, from the Stratton Report and its approach is the desirability of a new commission's revisiting the question of an ecosystem design in shaping policy and administrative institutions. The Stratton Commission stressed the need for an ecosystem approach, but if revisited today each of its segment or sector reports

and recommendations would look quite different from a 1969 perspective since we have gained so much experience since then in attempting to make ecosystem ideas operational in administration. Unfortunately, it must be conceded, a great deal of "ecosystem management" design in the various agencies of government today amounts to little more than rhetorical re-packaging or outright obfuscation. Prof. Oliver Houck, among others, has concluded, for example, that ecosystem management systems have proved in the field to be "amorphous and unenforceable;" [19] and sometimes they seem to be justified by their champions in terms that amount to little more than a design for avoiding definitive management decisions and keeping "stakeholders" happy.

These issues which have arisen in ecosystem analysis and management indicate that the opportunity for a new commission to clarify the conceptual problems and point the way to policy solutions is all the more needed and capable of producing useful results. Similarly, one can anticipate that objectives of sustainability and biodiversity will need to be integrated fully into the foci of new sectoral studies as well as an overall report on policy, especially as they are mandated by the terms of the latest developments in international environmental law.

Looking Back: How the Commission Worked

One of the most interesting questions before a conference on prospects for a Stratton II concerns what aspects of the first commission's organization and mode of investigation ought to be emulated, and which if any rejected or modified. Without attempting to provide answers, it is worth setting forth that the staff was of exceptional quality-a factor no doubt more important than mere size-but the 15 commissioners had 15 professional staff and an additional ten support personnel. There was correspondence with 600 individuals in government, the academic institutions, and industry, in addition to the commission's hearing formal testimony of 126 witnesses. Monthly meetings were conducted; and a total of 19 plenary meetings, lasting two to four days, were held. In addition, special panels were established with assigned areas of responsibility. Without access to the records of hearings and exchanges of working papers, etc., it is difficult for the historian to judge effectiveness-except by reference to the final product in the Report, whose excellence on so many counts is legendary. The time permitted for preparation of the present work did not allow for archival research or more than preliminary interviewing, to probe some of these important questions. But a fuller analysis of the individual segment reports and recommendations could, I think, provide important insights into the ways in which the Stratton Commission's organization, formal procedures, and informal dynamics hold lessons for us today.

ACKNOWLEDGMENT: Research from which this study is drawn has been supported in part by funds from NOAA and from the State of California, through a project grant from the California Sea Grant College Program to the Ocean Law and Policy Program, Center for the Study of Law and Society, University of California, Berkeley.

---

[1]Author's note: I want to acknowledge the seminal importance of Edward Wenk, Jr., T*he Politics of the Ocean* (Seattle, 1972) as a source of information and interpretations for any retrospective study, such as this one, seeking to assess aspects of the origins, context, and effectiveness of the Stratton Commission, either on its own terms historically or as a case study offering lessons for the future. For a much longer-term view that provides essential historical perspective on both the commission and the larger governmental enterprise in science, technology and policy in which it played so important a role for ocean affairs, the classic study by A. Hunter Dupree, *Science in the Federal Government* (New York, 1957) remains invaluable; so too with respect to policy history and analysis are the various studies, over the years, by leading scholars in policy process and especially science policy and ocean policy, including, among others, Biliana Cicin-Sain, Robert Knecht, Don Price, Warren Wooster, John A. Knauss, Robert Friedheim, Jack Archer, Gerard Mangone, Robert Abel, and William T. Burke. Though not specifically cited in this conference version of the present study, their writings provide essential context and information for any study with purposes such as animate the present one and the conference for which it is prepared. It should be noted that some sections of the present conference paper incorporate materials from an earlier brief presentation made by the present author to the 1992 Honolulu meetings of the Ocean Governance Study Group.

[2]*Our Nation and the Sea: A Plan for National Action* (Washington, 1969).

[3] Wenk streses throughout his analysis in *Politics of the Ocean* the key importance of Vice President Humphrey's role, a view seconded in the statement prepared for this conference by John Knauss. At a later time, the fortuitous advantage of one member's having direct access to President Nixon's most influential adviser, Attorney General Mitchell, kicked in as a critical factor in getting the report prominently on the White House agenda and assuring a more favorable presidential reaction to its principal organizational recommendation that (by all indications) it would have received otherwise from the Oval Office.

In a widely cited analysis of ocean policy history, Robert Abel states: "Viewed in retrospect, it would be difficult to identify a more dynamic duo than Vice President Humphrey and Dr. Wenk" as evidenced in their role in the cabinet level marine council, a group that would be of decisive importance in anticipating issues, paving the way politically for the Stratton Commission, and complementing the efforts of the commissioners and the staffs and consultants that were responsible for the various segments of the Stratton study. Abel, "History of the U.S. Ocean Policy Program," in *Making Ocean Policy* (ed. F. W. Hoole *et al*., 1981) 17.

[4]In their study of the auto industry and pollution control, Krier and Ursin emphasize that in the dynamics of political and policy process leading to adoption of the smog control regulatory regime, it was the sudden advent of smog alerts at an unprecedented level that galvanized public opinion and overcame the "normal" process by which industry would stand firm and place the burden of proof so heavily on environmentalists that the legislation could be blocked. James Krier and Edmund Ursin, *Pollution and Policy: A Case Essay on California and Federal Experience with Motor Vehicle Air Pollution, 1940-1975* (Berkeley and Los Angeles, 1977).
Stonewalling also figured heavily in the oil industry's resistance to popular efforts to place offshore oil rigs under strict regulation, but the Santa Barbara oil spill disaster changed entirely the balance of power in the political arena almost overnight. On this and other aspects of change in legal process relevant to this conference's theme that characterized the 1960s and early 1970s, see Harry N. Scheiber, "Technology and American Legal Development, 1789-1986," in *Technology, The Economy, And Society: The American Experience*, ed. J. Colton and S. Bruchey (New York, 1987), pp. 83-125.

[5]The importance of these predecessor studies is stressed by both Ed Wenk and by John Knauss in their contributions to this symposium.

[6]Margaret Deacon's brilliant historical studies, as well as the major works by Susan Schlee, document the earlier episodes of upsurges of interest in oceanographic enterprises. See Deacon, *Scientists and the Sea, 1650-1900: A Study of Marine Science* (New York, 1971); Schlee, *Edge of an Unfamiliar World: A History of Oceanography* (New York, 1973).

[7]See Harry N. Scheiber, "Modern U.S. Pacific Oceanography and the Legacy of British and Northern European Science," in Stephen Fisher, ed, *Man and the Marine Environment* (Exeter Maritime Studies, No. 9. Exeter, U.K., 1994), 36-75.

[8]The defense industry interests played a part in the debate of ocean policy that was probably impelled in part by concern about a possible decline of contracts in other areas of military technology. A fuller discussion of this aspect of the debate will be reserved for a later revision of this paper.

[9]Scheiber, "Pacific Ocean Resources, Science and Law of the Sea; Wilbert M. Chapman and the Pacific Fisheries, 1945-70," *Ecology Law Quarterly*, 13 (1986) 381-534.

[10] Ibid.

[11] Milner B. Schaefer to Sen. Warren Magnuson, May 6,m 1964, copy in Wilbert M. Chapman Papers, University of Washington Libraries, quoted in Scheiber, "Success and Failure in Science-Policy Interactions: Cases from the History of California Coastal and Ocean Studies, 1945-1973," in National Research Council, *Improving Interactions between Coastal Science and Policy* (National Academy of Sciences, 1995), 107-8.

[12] Ibid. ("Success and Failure"), 108ff.

[13]On the emergence of ecosystem science, see Harry N. Scheiber, "From Science to Law to Politics: An Historical View of the Ecosystem Idea and Its Effect on Resource Management," *Ecology Law Quarterly*, 24: 631-652 (1997); and id., "Pacific Ocean Resources," supra note 9.

[14]"Success and Failure," cited n. 10 supra.

[15]Report, at pp. 15, 173.

[16]Report, p.—- . In this and the following paragraphs, I incorporate directly materials from my 1992 presentation to the Ocean Governance Study Group Symposium volume, *Ocean Governance: A New Vision-Analyses for Improved, Integrated Governance of Oceans and Coasts*, ed. Biliana Cicin-Sain (Newark, Delaware, 1992), 19-21.

[17]Report, p. 83.

[18]This is the place in policy evaluation in which we badly need a more rigorous approach to the uses of scientific information and analysis in relation to social and political analysis—a vexed topic which obtained a fresh look from an NAS-NRC Ocean Studies Board conference at Irvine on science, policy studies, and coastal management (papers published in NRC, *Improving Interactions*, cited n. 10 supra).

[19]Oliver A. Houck, "On the Law of Biodiversity and Ecosystem Management," *Minnesota Law Review*, 81: 869 (1997) (a study and critique of the U.S. Forest Service ecosystem and biodiversity programs as they have been applied in the field). See also Scheiber, "From Science to Law to Politics," cited note 11 supra.